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What are the risks for farmland value?

by Alan D. Barkema*, adbarkema@everestkc.net

One of the most striking developments in the farm economy in the past decade is a surge in farmland value. According to Iowa State University's 2013 Iowa Land Value Survey, released last month, the average value of the state's farmland climbed to a record \$8,716 per acre in 2013, a real (or inflation-adjusted) increase of more than three-fold since 2003 (Chart 1). The recent run-up in farmland value is reminiscent of the 1970s farm boom, when the average value of Iowa farmland more than doubled between 1973 and 1979. The 1970s boom ended badly, however, with farmland value abruptly plunging from the 1979 peak.

The surge in the last decade and lingering memory of boom and bust three decades ago heighten current interest in prospects for farmland value. This article provides perspective on what might lie ahead by exploring the relationship of farmland value to two key factors — earnings and interest rates.

Investors are willing to pay more for assets with higher earnings and, as expected, a close and strongly positive relationship between earnings — measured by annual cash rent paid to land-owners — and farmland value in Iowa is evident in Chart 1. The state's average cash rent surged and then plunged with average farmland value in the boom and bust cycle three decades ago, and cash rent has soared with farmland value in recent years.

While cash rent and farmland value generally move together, the relationship between the two is not constant (Chart 2). In particular, the ratio of cash rent to farmland value — a measure of the financial yield on a farmland investment — has varied widely through time. The rent-to-value ratio edged down from about 8 percent to 4.5 percent as farmland value soared in the 1970s. Then the rent-to-value ratio shot up to a peak of about 10.5 percent as farmland value plunged to

the 1986 low. Since then, the rent-to-value ratio has generally declined to the current level of about 3 percent.

Another striking feature in Chart 2 is the close correspondence between the farmland rent-to-value ratio and the real yield on financial assets, 10-year U.S. Treasury notes and long-term corporate bonds. A farmland investment differs markedly from these financial alternatives. In particular, both Treasury notes and corporate bonds trade in more liquid financial markets, and Treasury securities are also valued for their risk-free status. Nevertheless, the rent-to-value ratio and real yields on these securities generally move in concert, surging in the early 1980s and generally declining since then to an unusually low level.

A close relationship among the yields on these three assets stands to reason. For example, a broad decline in yields on financial assets could encourage investors to purchase farmland instead, driving up farmland value and pulling down the rent-to-value ratio. Alternatively, a broad increase in yields on financial assets could attract investors away from farmland, pushing up the rent-to-value ratio as farmland value declined.

These market relationships tying farmland value to cash rent and yields on alternative investments form the foundation for the model of Iowa's average farmland value developed in Chart 3. In some years, the predicted farmland value from the model differs widely from the actual value, but the model provides a good fit with the overall direction and magnitude of changes in farmland value through the years. Looking ahead, the model also provides a rough guide for future farmland value, given varying prospects for cash rent and yields on investment alternatives, represented here by the 10-year Treasury yield.

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First, consider prospects for cash rent. Cash rent has shot up in recent years, driven by record farm earnings. Strong farm earnings, in turn, have been supported by gains in farm productivity and burgeoning global demand for food and fuel. Big crops in 2013, however, have rebuilt crop supplies and pushed crop prices down, pointing to weaker farm earnings for the immediate future and clouding the longer-term outlook. Three projections for real cash rent are developed in Chart 3:

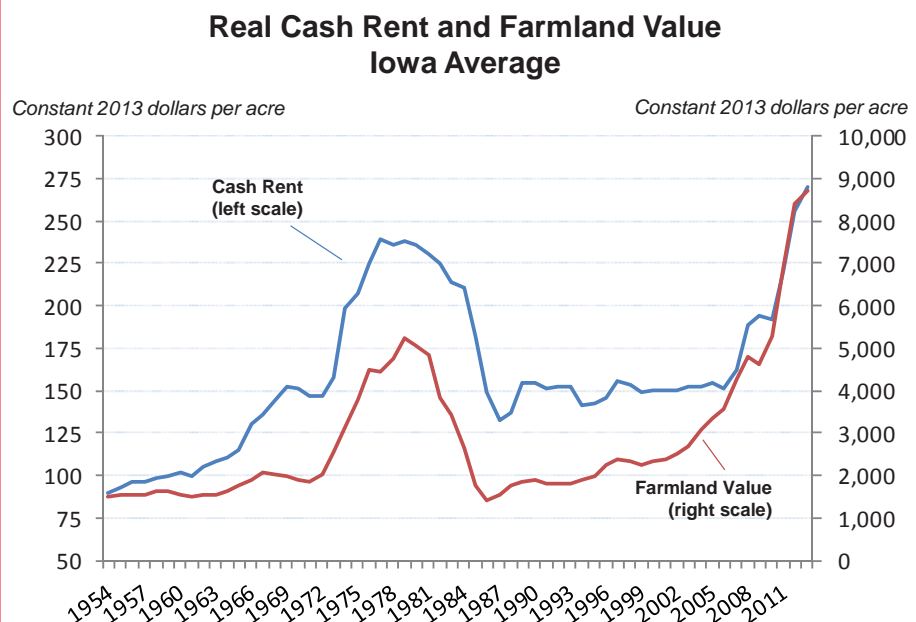
- 1) a gradual increase during the next five years to a level 10 percent above the 2013 average,
- 2) no change from 2013, and
- 3) a gradual five-year decrease to 10 percent below the 2013 average.

Next, consider prospects for the 10-year Treasury yield. Longer-term interest rates have fallen to unusually low levels in recent years, pushed down in the Federal Reserve System's continued effort to support the nation's recovery from an exceptionally severe recession, which ended four and a half years ago. Last month, however, the Federal Reserve announced that it would slow its monthly purchases of Treasury and other securities, the first step in a long-expected, gradual shift to a less accommodative monetary policy. With interest rates already at an unusually low level, the Federal Reserve's shifting stance in financial markets is likely to nudge interest rates up, although how fast and how far are unknown. For the three projections in Chart 3, the real yield on 10-year Treasury notes gradually climbs during the next five years to the long-term average of 3 percent.

The three projections for farmland value illustrate how a broad increase in longer-term interest rates could either blunt an increase or deepen a decline in farmland value as cash rent changes. With the five-year climb projected for the real 10-year Treasury yield, the model suggests real farmland value would rise about 4 percent, decline about 10 percent, or decline about 23 percent if real cash rent rose 10 percent, held steady or declined 10 percent, respectively.

In summary, farmland earnings and the level of interest rates, which describes investment returns available in other parts of the economy, are key factors determining farmland value. In today's economy, interest rates in national financial markets and the rent-to-value ratio in the Iowa farmland market are unusually low. Prospects for an eventual return of these key factors to historic norms are at the root of downside risk for Iowa's farmland value.

Chart 1: High returns on farmland investments are quickly capitalized into farmland value



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Chart 2: The annual return on farmland tracks the yield on financial alternatives

Iowa Farmland Rent-to-Value Ratio and Real Yield on Financial Alternatives

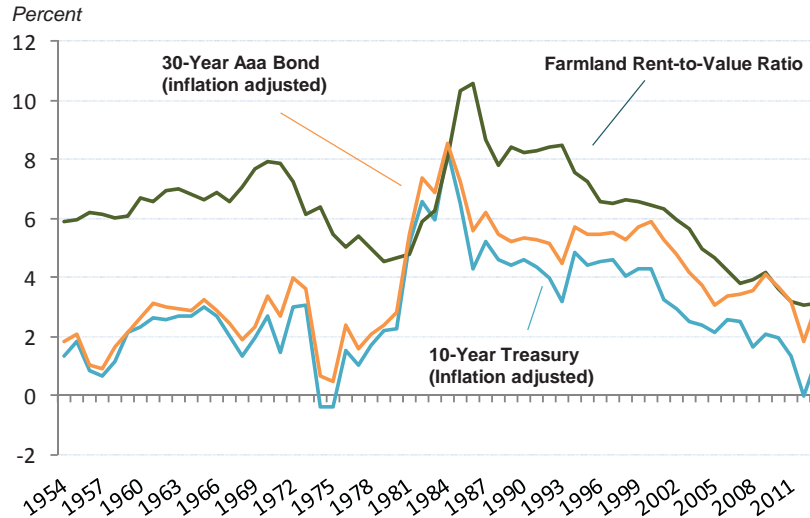
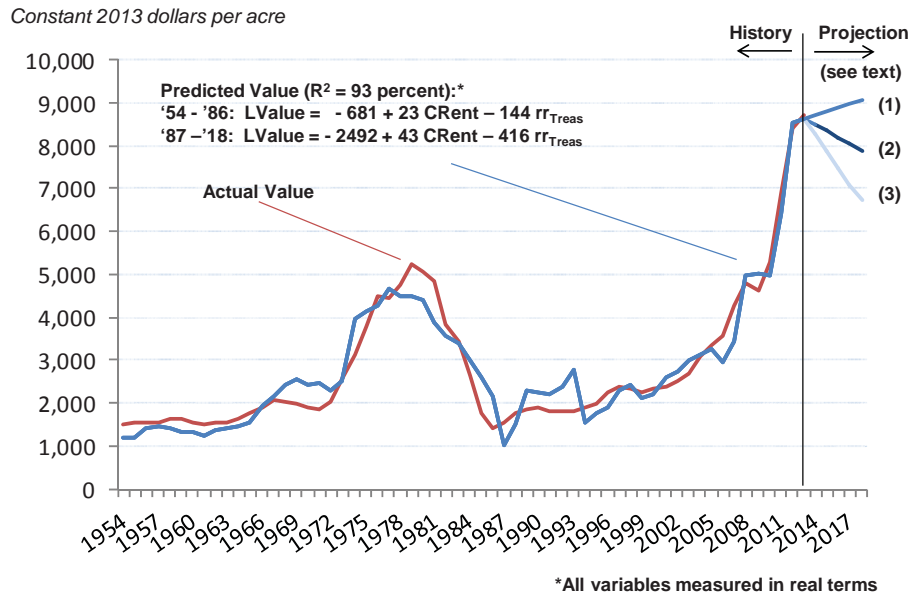


Chart 3: Shifts in cash rent and the 10-year Treasury yield explain much of the variation in Iowa farmland value

Actual and Predicted Iowa Farmland Value



* Alan D. Barkema retired from the Federal Reserve Bank of Kansas City in February 2012 as senior vice president and director of research. He also served as professor and head of the Agricultural Economics Department at Oklahoma State University from 1996 to 1999.

A native of Alexander, Iowa, Barkema holds B.S., M.S. and Ph.D. degrees from Iowa State University and an M.S. degree from Cornell University, and he is a graduate of the Executive Program at Stanford University. Barkema, his wife and two children reside in Lenexa, Kansas.

Updates, continued from page 1

Internet Updates

The following information file and decision tools have been added on www.extension.iastate.edu/agdm.

Raising Versus Buying Heifers for Beef Cow Replacement – B1-73 (3 pages)

Buying Heifers for Beef Cow Replacement – B1-73 (Decision Tool)

Raising Heifers for Beef Cow Replacement – B1-73 (Decision Tool)

Current Profitability

The following tools have been updated on www.extension.iastate.edu/agdm/info/outlook.html.

Corn Profitability – A1-85

Soybean Profitability – A1-86

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15

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